TN-3270

SERVER APPLICATION

USER'S MANUAL

FOR

DT-6XXX

EMBEDDED NETWORK PROCESSORS

RELEASE.VERSION 13.1

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IMPORTANT SAFETY INSTRUCTIONS

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

When installing, operating, or maintaining the DT-6XXX equipment on which this application runs, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

❑ Read and understand all instructions.
❑ Follow all warnings and instructions marked on this product.
❑ For information on proper mounting instructions, consult the User's Manual provided with this product.
❑ The telecommunications interface should not leave the building premises unless connected to telecommunication devices providing primary and secondary protection.
❑ This product should only be operated from the type of power source indicated in the User's Manual.
❑ This unit is intended to be powered from either –48 V DC or AC voltage sources. See User's Manual before connecting to the power source.
❑ The –48 V DC input terminals are only provided for installations in Restricted Access Areas locations.
❑ Do not use this product near water, for example, in a wet basement.
❑ Never touch uninsulated wiring or terminals carrying direct current or leave this wiring exposed. Protect and tape wiring and terminals to avoid risk of fire, electric shock, and injury to service personnel.
❑ To reduce the risk of electrical shock, do not disassemble this product. Service should be performed by trained personnel only. Opening or removing covers and/or circuit boards may expose you to dangerous voltages or other risks. Incorrect re-assembly can cause electric shock when the unit is subsequently used.
❑ For a unit intended to be powered from –48 V DC voltage sources, read and understand the following:
  • This equipment must be provided with a readily accessible disconnect device as part of the building installation.
  • Ensure that there is no exposed wire when the input power cables are connected to the unit.
  • Installation must include an independent frame ground drop to building ground. Refer to User's Manual.

This symbol is marked on the DT-6XXX, adjacent to the ground (earth) area for the connection of the ground (earth) conductor.

❑ This Equipment is to be Installed Only in Restricted Access Areas on Business and Customer Premises Applications in Accordance with Articles 110-16, 110-17, and 110-18 of the National Electrical Code, ANSI/NFPA No. 70. Other Installations Exempt from the Enforcement of the National Electrical Code May Be Engineered According to the Accepted Practices of the Local Telecommunications Utility.
❑ For a unit equipped with an AC Wall Plug-In Unit, read and understand the following:
  • A DT-6061 unit was tested with the K'TRON, Model KA-52A Wall Plug-In Unit and a DT-6X60 with a Phi Hong Model PSA-30U-240 Wall Plug-In Unit (110-240 V AC to 24 V DC).
  • Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
  • Do not staple or otherwise attach the power supply cord to the building surfaces.
  • Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
  • The socket outlet shall be installed near the equipment and shall be readily accessible.
  • The Wall Plug-In unit may be equipped with a three-wire grounding type plug, a plug having a third (grounding) pin. This plug is intended to fit only into a grounding type power outlet. Do not defeat the safety purpose of the grounding type plug.
  • Do not allow anything to rest on the power cord. Do not locate this product where the cord may be abused by persons walking on it.
  • Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    a) When the powers supply cord or plug is damaged or frayed.
    b) If liquid has been spilled into the product.
    c) If the product has been exposed to rain or water.
    d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by qualified technician to restore the product to normal operation.
    e) If the product has been dropped or the cabinet has been damaged.
    f) If the product exhibits a distinct change in performance.

Save These Instructions

1 INTRODUCTION

The TN-3270 Server Application that runs on the DT-6XXX family of Embedded Network Processors allows a 3270 client to access a host via a BNS SYNC8 BiSync Host Interface (BHI) module. This Application is designed to replace the TN-3270 DKAP application in either an **integrated** (BNS network**)**, or a **non-BNS** (a.k.a. totally IP**)** network environment. The 3270 client programs are typically resident on a PC.

1.1 TN-3270 SERVER APPLICATION (INTEGRATED CONFIGURATION)

The following diagram depicts a configuration involving a 3270 client in an integrated environment. In this environment, a DKAP module running the TN-3270 Server Applications is no longer needed in the node. Instead a DT-6XXX Embedded network Processor is used. A DT-6XXX works either in an IP, frame relay or ATM network. It provides better performance and can handle tremendously more sessions than a DKAP or HS-DKAP module.
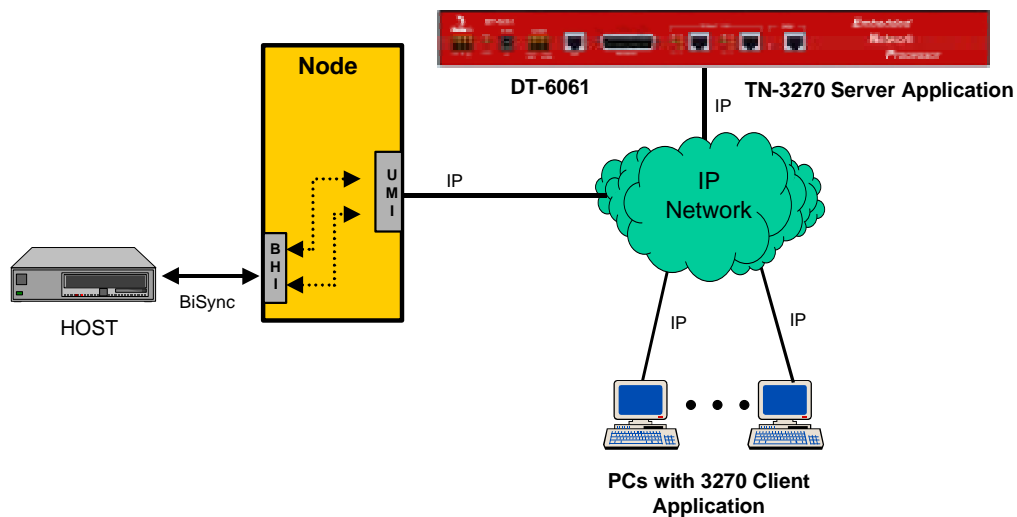
Figure 1: Integrated Configuration

In the above diagram a 3270 client makes a connection to the BiSync host using the IP address of the DT-6061 plus the TCP port assigned to the TN-3270 server **instance**[1] that is assigned to that line on the BiSync host.

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[1] An application **instance** can be described as a unit of configuration parameters as a specific DT-6XXX application defines them. In other words, each **instance** of an application is a completely separate process where all aspects of the operation of the application are performed entirely within that process.

Multiple clients call the same IP address and TCP port number. The maximum number of simultaneous clients is a configurable option within the application.

The function of the Universal Mediation Interface (UMI) module is to provide the protocol mediation between the BNS network, and the IP network.

1.2 TN-3270 SERVER APPLICATION (IP NETWORK ONLY CONFIGURATION)

The TN-3270 Server application may also be used in circumstances where there is no BNS network.
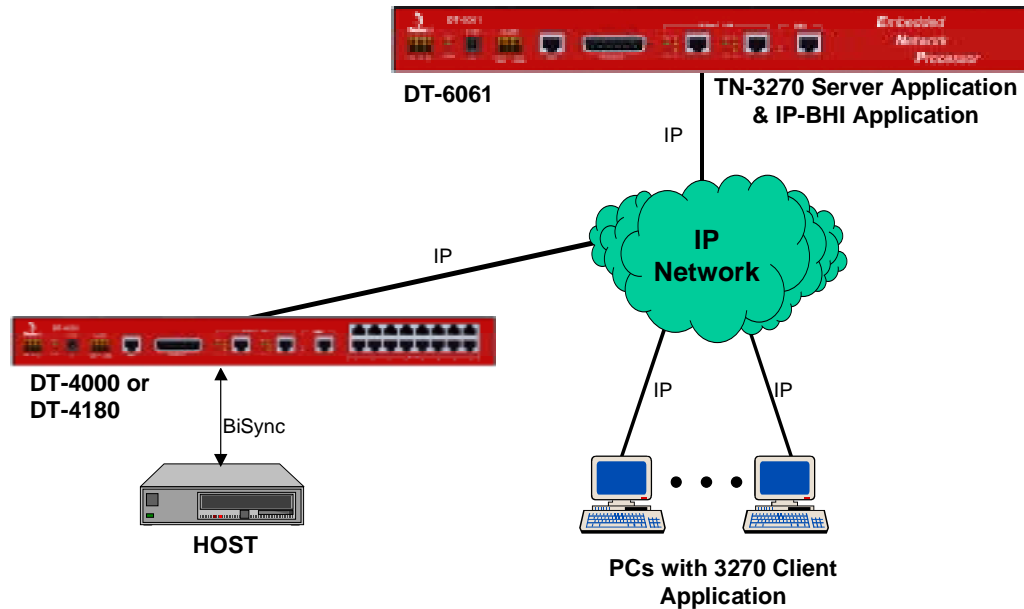
Figure 2: IP Network Only Configuration

In the above diagram the DT-6061 is actually executing one or more *instances* of two distinct applications[2].

1) The first application instance is the TN-3270 Server Application. This is the very same application as in the integrated network case, and the subject of this User's Manual.

2) The second application instance is the BiSync Host Interface (IP-BHI) application. The IP-BHI application interfaces with a BiSync host through a DT-4000, DT-4180, or DT-4280 and performs Cluster Controller emulation for a multi-point host line, thus eliminating the BNS SYNC8 (BHIM) module.

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[2] The DT-6XXX Platform may support up to 5 simultaneous application types.

1.3 VARIATIONS: MULTIPLE HOSTS AND MULTIPLE INSTANCES

Each instance of the TN-3270 Server Application can be configured to distribute clients over multiple BiSync lines connected to one or more BiSync hosts. Each BiSync line must be callable by its own IP address and TCP port number, e.g. via the IP-BHI application or via a UMI module.

When multiple hosts are configured, the TN-3270 Server Application allocates new sessions to hosts round robin. If a host fails to answer a call for a new session, it is removed from the round-robin allocation. Any host so removed is periodically monitored until it successfully answers a test call (tried every 70 seconds), whereupon it is made eligible again for allocation to client sessions.

Multiple instances of the TN-3270 application may be configured to serve clients using a shared IP address and TCP port. This permits serving up to 3000 clients (up to 30 instances on a single DT-6061 or DT-6160 each configured with up to 100 clients[3]) using a single address. The DT-6XXX platform software distributes the calls from the clients to the single address round-robin to the individual instances. The instances must be individually configured so that calls are distributed to the desired set of BiSync lines.

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[3] A DT-6260 has 48 instances and thus can support up to 4800 clients

2   TN-3270 SERVER APPLICATION CONFIGURATION

2.1   DT-6XXX PLATFORM CONFIGURATION

Before proceeding with the configuration of the TN-3270 Server Application, make sure that the DT-6XXX Platform has been properly configured and the TN-3270 Server Application is installed on the DT-6XXX Platform. The steps necessary for this are outlined below and are stated in greater detail in the **DT-6XXX Platform User's Manual** that can be downloaded from the Datatek web site at *www.datatekcorp.com*. Click on the *Support* link.

Platform Configuration:
This command sequence is required for the initial configuration of the DT-6XXX.

Platform Software Registration:

*The platform software must be registered (using the **register** command) in order to run any applications.*

Application Installation:
*This action requires that a host acting as an ftp server is present on a network that is accessible by the DT-6XXX **install** command.*

Application Software Registration:

*The application software must be registered (using the **regapp** command) in order for it to be enabled.*

Assignment of an Application to an Instance:
The number and type of application must be configured as a system parameter.

2.2   TN-3270 SERVER APPLICATION CONFIGURATION

Once the DT-6XXX Platform configuration is complete, instances of the TN-3270 Server Application must be configured.

The configuration of the TN-3270 Server application takes place on the application's OA&M port. This OA&M port is accessed by making a Telnet connection to **the IP Address of the DT-6XXX that includes the TCP port number of the TN-3270 Server Application instance**.

The TCP port number of the OA&M port for a particular instance of the TN-3270 Server Application is calculated using the following equation:

> ***10000 + (the application instance # in the DT-6XXX)***

One TCP session exists per active client. On the client PC, the TCP session is addressed to the TCP port number of an instance of the TN-3270 server application on the DT-6XXX. This is the port that the TN-3270 Server Application uses to listen for an incoming IP call from the client. The default server TCP port number for each instance is calculated using the following equation:

> ***30000 + ((instance # - 1) X 200)***

The **server** command can be used to change the default TCP port number for an instance, which will allow multiple instances to share a common TCP port number. Typically, a common shared port number is 23,

Each instance is configured to connect with one (usually) or more BiSync lines.

2.2.1 CONFIGURATION PLANNING

Consider the following planning issues prior to installation and configuration of the DT-6XXX TN-3270 Server Application.

❑ The number of TN-3270 Client sessions to be allowed for an instance of the TN-3270 server application usually corresponds with the number of terminals in the BHI configuration (either in the BNS SYNC8 BHI modules or in the IP-BHI application) for a particular BiSync line. Where it is desired to pool multiple BiSync lines for use by a client user population, one instance of the TN-3270 server application may be configured to call up to 20 different BiSync lines. The TN-3270 server application allows **a maximum of 100 client terminals per instance**. The default number is sixteen.

❑ The terminal type to be requested from the TN-3270 client must match. Certain client applications *(such as some versions of Hummingbird Exceed)* have no provision to configure the 3270 terminal model. Of greater concern is that the **terminal model must match what is configured on the BiSync line**. A mismatch could cause a serious data error. The TN-3270 Server application will query and set the client for the appropriate terminal type. In the past, this has been defaulted to an "IBM-3278-2" terminal. This is the standard 24x80 terminal type. The TN-3270 server allows other terminal types as well. For special circumstances, the TN-3270 server can be configured to accept a secondary terminal type.

❑ For configuration within the TN-3270 Server Application, consider the IP address of the BHI, and its TCP port for the group of sessions to which a particular BiSync line is attached.

- If the BHI is implemented in a BNS SYNC8 module, then this is the IP address of the UMI module and a TCP port number corresponding to the hunt group for a specific set of virtual ports on the UMI. The virtual ports on the UMI specified by this hunt group are configured as "synchronous" virtual ports and have a pre-defined destination to the SYNC8 BHIM group associated with these terminals.

- If the BHI is implemented in the IP-BHI application, then the IP address is the address of the DT-6XXX on which the IP-BHI application is resident and the TCP port number is computed using the equation: **30000 + ((instance # - 1) X 200)+ the client group number** where a client group number is the number of the group defining a set of logical cluster unit and logical terminals on a BiSync line.

2.3   SAMPLE INTEGRATED CONFIGURATION

The following network diagram depicts a generic TN3270 configuration where there is a mixed network of IP elements and BNS. Several network components require configuration. The administrator may need to configure one or more of the following items:

1. BNS Node Configuration
   - UMI Module
   - SYNC8 (BHI) Module
2. DT-6061 Configuration
   - DT-6061 Platform
   - TN-3270 Server Application
3. PC TN-3270 Client
4. BiSync Host

The following sections describe sample configurations for items 1-3 above and are based on the diagram below. Configuration of item number 4 (BiSync Host) is beyond the scope of this document. However, knowledge of the BiSync Host's configuration is required to properly configure the BNS SYNC8 module.
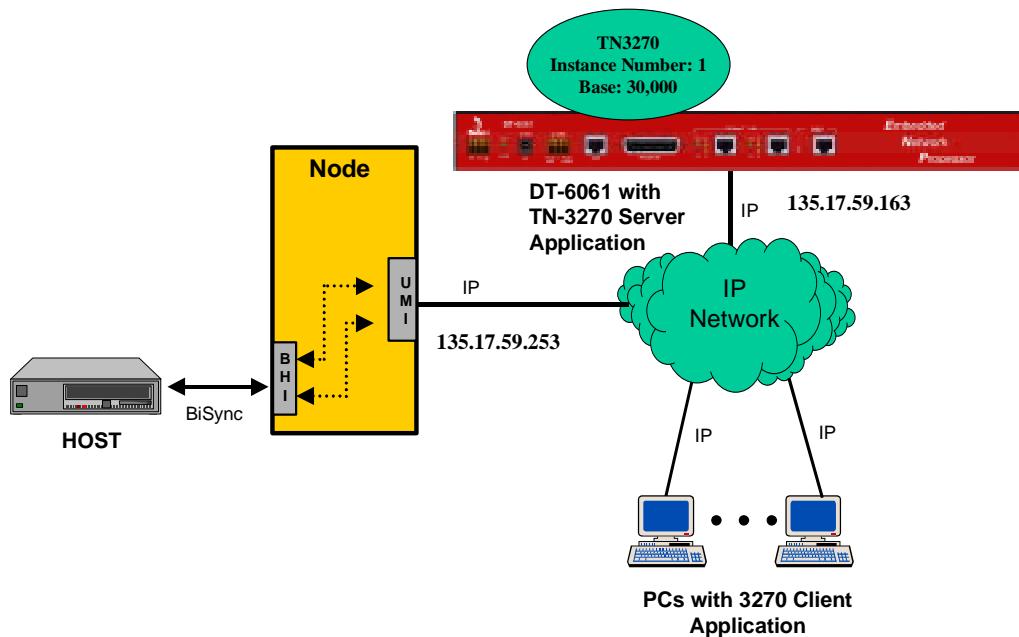
Figure 3: Sample Integrated Configuration

2.3.1 BNS NODE CONFIGURATION

2.3.1.1 <u>UMI MODULE CONFIGURATION</u>

The UMI can be configured on a BNS/Datakit® node by either one of the two ways:

1. As a SAM504, which requires additional configuration on the UMI module itself via the UMI's OA&M console. This requires two definitions of the same virtual ports, once on the SAM504 and once on the UMI module.
2. As a UMI module only. Beginning with BNS-2000 VCS (Datakit II VCS) Release 6.0, Build 87, the UMI can be configured solely on the BNS node like any other module. Software build 19 or higher must be installed on the UMI module.

The examples in the sections below depict the UMI configuration using method 2.

Detailed descriptions describing how to configure a UMI can be found in the following documents:
1. **UMI User's Manual**
2. **UMI User's Manual Supplement for BNS/Datakit II VCS Nodes.**

The overall configuration process for the UMI can be divided into two phases:

1. **Base Configuration:** setting up the **UMI** for IP connectivity and console security
2. **Operational Configuration:** setting up the **UMI** and BNS node to enable users to make calls between the BNS and IP networks

2.3.1.1.1 UMI - Base Configuration (BNS-2000 VCS Release 6.0 Build 87 and higher)

The following console output from a BNS node is the result of the **verify umi module** command. The results displayed below describe a UMI Base Configuration consistent with the configuration needs of the previous network diagram.

```
CC0> vfy umi mod 19


02-04-17 15:07:22 NODE=WOODY
M  verify umi module 19
   MODULE ADDRESS: 19
   MODULE TYPE: umi                    NCHLS: 512
   SERVICE STATE: in
   DOWNLOAD SERVER: controller
   VERSION: standard
   GATEWAY ADDRESS: 135.17.59.1
   LOCAL IP ADDR:   135.17.59.253    LOCAL SUBMASK:   255.255.255.0
   SNMP IP ADDR:    0.0.0.0          SNMP PORT:       0
```

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```
    DNS IP ADDR:
  vfy umi mod 19 (continued)


    DNS NAME1:
    DNS NAME2:
    DNS NAME3:


    COMMENT:
```

2.3.1.1.2 UMI - Operational Configuration

The following console output from a BNS node is the result of the **verify umi vport** command. The results displayed below describe a UMI Operational Configuration consistent with the configuration needs of the network diagram in section 2.3 above.

```
CC0> vfy umi vp 19 1


    02-04-17 15:08:43 NODE=WOODY
M   verify umi vport 19 1


    (Module information which is the same as above)


    Virtual Port Number 1 to 1
    Service State ==> in
    Service Type ==> ip_to_bns
    Group ==> 3270orig (This must be an originating group)
    Protocol ==> synchronous
    PDD ==> bscm2  (Points to a service name which points to a receive
       group of virtual terminals defined on a SYNC8 BHI module)
    Hunt Group Port ==> 14000
    CUG list ==> 0
    Peer to Peer Encryption ==> Transparent
    COMMENT    UMI vport for TN-3270 service
```

There is one vport defined for each client session that can be active at a time. Each vport is predefined to a service name that points either to a single virtual terminal on a virtual cluster or more realistically to a hunt group of virtual terminals defined on virtual clusters on the SYNC8 (BHI) ports. The hunt group port configured above (14000) on the UMI is the hunt address of virtual ports on the UMI itself to which a TN-3270 client on the user's PC will connect. This hunt group is different than the group of virtual terminals defined on the SYNC8 module.

2.3.1.2 SYNC8 (BHI) CONFIGURATION

The following BNS console output reflects the output of the SYNC8 **verify** command. The results displayed below describe a bsc3270 configuration consistent with the configuration needs of the previous network diagram. For a more detailed description of how to configure the SYNC8 Module, refer to the *BNS-2000 SYNC8 Module Reference Guide*.

Note: knowledge of the BiSync Host's configuration is required to properly configure the BNS SYNC8 module

This example shows a single virtual cluster controller with three virtual terminals defined in the same receive group. The client PC in the example could be connected to any one of the virtual terminals on the SYNC8 module.

```
CC0> vfy bsc terminal 30 all
MODULE ADDRESS: 30
MODULE TYPE: bsc3270               NCHLS: 100
SERVICE STATE: in
DOWNLOAD SERVER: controller
VERSION: standard


HOST    MSG                             CODE      PORT     BAUD
PORT    CHNLS     TYPE  TYPE   CHNG     SET       DUPLEX   RATE     SRVC
2        6        host  vtam   no       ebcdic    full     9600     in


PORT   COMMENT
2      to bsc3270 console


PORT CU     SRVC
2    2      in


            TERM        SCRN   RECV      LOGOFF   LOGOFF  FWD
PORT CU TERM TYPE       SIZE   GRP       METHOD   SEQ ID  ACK   SRVC


2    2  2   basic       1920   bscm2     none     N/A     no    in


            BKPL
PORT CU TERM CHNL
2    2  1      8
2    2  2      9
2    2  3     15
```

2.3.2 DT-6XXX CONFIGURATION

The DT-6XXX software is composed of two components. One component, called the *Platform,* exists to support all applications. The second component is comprised of the individual **application***(s)*.

The *Platform* provides Operating System functions, selected interfaces, protocol stacks, SNMP functions, and system OA&M while each **application** uses the services of the resident *Platform*.

2.3.2.1 DT-6XXX PLATFORM CONFIGURATION

The following console output reflects the output of the DT-6XXX **vfymod** and **vfycfg** commands. The results displayed below describe a DT-6XXX platform configuration consistent with the configuration needs of the previous network diagram. For a more detailed description of how to configure the DT-6XXX platform, refer to the *DT-6XXX Platform User's Manual*.

```
<tuna: DT-6160> vfy mod
      module type: DT-6160, Registered
         hostname: tuna.datatekcorp.com
         ippublic: 192.168.2.199
           status: Active
          ipother: 192.168.2.99
            label: tuna
           ipaddr: 192.168.2.48
          submask: 255.255.255.0
          gateway: 192.168.2.1
         mac addr: 0.96.10.11.58.123
         serial #: 176.61.10.11.58.123
          build #: 1.0
            rtu #: 5
         built on: Thu Apr 22 14:42:15 EDT 2004
           booted: 1.07 days ago
<tuna: DT-6160>


< tuna: DT-6160> vfycfg
  1 type=tn3270
```

2.3.2.2 TN-3270 SERVER APPLICATION CONFIGURATION

The following reflects the output of the TN-3270 **vfy** command based on the configuration input by the **bsc** command. This output reflects the commands necessary to configure the TN-3270 Server Application so that it is consistent with the configuration needs of the network diagram in Figure 3.

```
<TN3270> bsc dest=135.17.59.253 dport=14000 numsess=50
where
      dest=IP address of the UMI module
dport=TCP port number (This is the hunt group port number on the UMI
      module.)


<TN3270> vfy
M Verify TN3270 Instance Configuration
    Local IP Address: 135.17.59.163, Instance Number: 1
    BiSync Host Interface: 135.17.59.253 Port 14000.
    Number of Sessions: 50
    Session Alarm Threshold: 70%
```

```
Terminal Type: IBM-3278-2
Secondary Terminal Type: IBM-3279-2
Delay after Host connect: 0
Server TCP Port: 30000 (See the section below on how to determine this
   value.)
Console Inactivity Timeout DISABLED
Session Inactivity Timeout DISABLED
```

2.3.3 PC TN-3270 CLIENT

For whatever TN-3270 client is being used, certain configuration parameters must be administered on the client to insure connectivity to the BiSync Host. These parameters are:

1. DT-6XXX IP Address
2. TCP Port Number of the application instance being called

Based on the previous network diagram,

The DT-6XXX IP Address is *135.17.59.163* .
The TCP Port number at the Server is *30000* .
The default TCP port number for an instance is a function of the instance in which the application is installed on the DT-6XXX. It is calculated using the following equation:

TCP Port Number = 30000 + ((instance # - 1) X 200)

The **server** command can be used to change the default TCP port number. That, in turn, will allow multiple instances to share a common TCP port number. A commonly used, shared TCP port value is 23, which is the standard telnet port value.

2.3.4 RELATIONSHIPS

To clarify and summarize the relationship of various TCP ports and hunt group ports for a TN-3270 PC client, the TN-3270 Server Application software, and the UMI module, the following applies:

1. The TCP port to which the TN-3270 PC client is configured to point is the same as the TCP port number that is configured as the server port of one or more instances of the TN-3270 Server Application on the DT-6XXX. The numeric value of this port is either the default calculated by the equation in section 2.3.3 above or overridden by the server command for a particular instance.

2. The TCP port (dport) defined in the BSC command for an instance of the TN-3270 Server Application on the DT-6XXX is the same as the port number defined by the hunt group port (BNS UMI configuration) or vport hport (UMI module configuration) parameter configured on one or more virtual ports on the UMI module.

3. An instance can service several actual BSC host lines where each is defined using the BSC command. Up to 20 host lines can be configured per instance as long as the total aggregate number of terminals is 100 or less. The host lines can be spread over several BiSync hosts or reside on the same host.
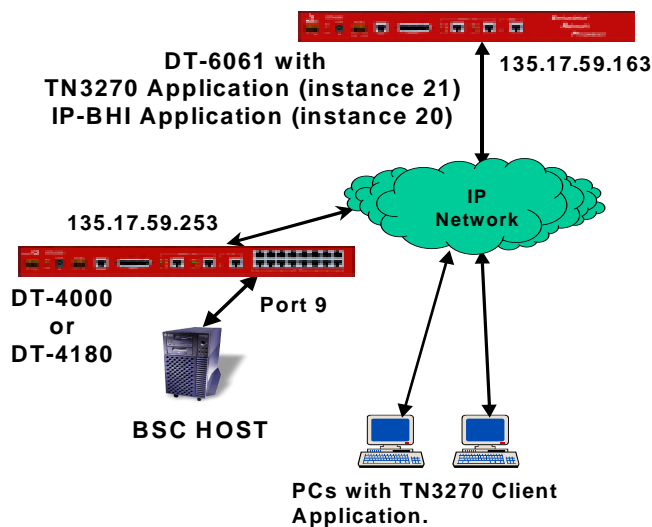
2.4   SAMPLE IP NETWORK ONLY CONFIGURATION

The following network diagram depicts a generic TN-3270 configuration where there is only an IP network and no BNS. Several network components require configuration. The administrator may need to configure one or more of the following items:

1. DT-4000/DT-4180/DT-4280
2. DT-6XXX Software
   - DT-6XXX Platform
   - IP-BHI Application
   - TN-3270 Server Application
3. PC TN-3270 Client
4. BiSync Host

The following sections describe sample configurations for items 1-3 above and are based on the diagram below. Configuration of item number 4 (BiSync Host) is beyond the scope of this document. However, knowledge of the BiSync Host's configuration is required to properly configure the BNS SYNC8 module.

DT-6061 with
TN3270 Application (instance 21)
IP-BHI Application (instance 20)

135.17.59.163

IP Network

135.17.59.253

DT-4000
or
DT-4180

Port 9

BSC HOST

PCs with TN3270 Client Application.

Figure 4: Sample IP-Only Configuration

Note that a DT-6XXX with 2 RTU's or more is required in this configuration since two different applications are residing in the same DT-6XXX. Each application could also reside in different DT-6XXX's. It is the decision of the network administrator/planner what exact configuration is used.

2.4.1 DT-4000/DT-4180/DT-4280 CONFIGURATION

A DT-4000, DT-4180, or DT-4280 is used to connect the BiSync host(s) to the IP network. What follows is the output from a DT-4180 console where a BiSync is connected to Port 9. More than one BiSync host can connect to the same DT-4000, DT-4180, or DT-4280.

<DT-4180> vfy p 9

```
Current Configuration for Port 9:

    Type ==> TCP Port w/Call Origination.
    Service State ==> In Service.
    TCP Destination ==> 135.17.59.163  Port 33800
    Protocol ==> EBCDIC BiSync.
    DXE ==> DCE (w/Normal Clocks).
    Baud Rate ==> 9600 bps.
    Line Encoding ==> NRZ.
    Constant Carrier ==> Enabled.
    Permanently Active ==> Enabled.
    Peer to Peer Data Encryption ==> Disabled.
    Comment ==> "to ip-bhi app"
```

A DT-4000/DT-4180/DT-4280 is configured to call the IP-BHI application on a DT-6XXX. The IP address of the DT-6XXX in this example is 135.17.59.163.

Each line of one or more BiSync hosts calls its own instance of the IP-BHI application. Conversely, each instance of an IP-BHI application supports only one BiSync host line in a DT-6XXX. In this example, the IP-BHI application is installed on the DT-6XXX in instance 20. Hence the port address configured on the DT-4XXX is determined via the following equation:

Port =**30000 + ((instance # - 1) X 200) = 30000+((20-1)*200)=33800**

Note that a single DT-6061 or DT-6160 can support a *combined total of 30 instances of either the IP-BHI application and/or TN-3270 server application. A DT-6260 can support 48 instances.*

2.4.2 DT-6XXX CONFIGURATION

The DT-6XXX software is composed of two components. One component, called the *Platform,* exists to support all applications. The second component is comprised of the individual **application***(s)*.

The *Platform* provides Operating System functions, selected interfaces, protocol stacks, SNMP functions, and system OA&M while each **application** uses the services of the resident *Platform*.

2.4.2.1 DT-6XXX PLATFORM CONFIGURATION

The following console output reflects the output of the DT-6061 **vfymod** and **vfycfg** commands. The results displayed below describe a DT-6061 platform configuration consistent with the configuration

needs of the previous network diagram. For a more detailed description of how to configure the DT-6XXX platform, refer to the **DT-6XXX Platform User's Manual**.

```
<DT-6061> vfymod
  module type: DT-6061, Registered
  hostname: test
  label: none
  ipaddr: 135.17.59.163
  submask: 255.255.255.0
  gateway: 135.17.59.1
  mac addr: 0.96.29.2.56.87
  serial #: 0.0.6.72.97.233
  build #: 13.1
  rtu #: 2
  built on: Thu Apr 22 14:42:15 EDT 2004
  booted: 1.07 days ago


<DT-6061> vfycfg
20 type=ip_bhi
21 type=tn3270
```

2.4.2.2 IP-BHI APPLICATION CONFIGURATION

For the IP-BHI application itself, only the logical clusters and terminals are defined long with application comments and console labels. The rest of the parameters are the result of the configuration of the DT-6XXX platform. The output of the IP-BHI console is shown below for a **vfy bhi**.

```
<IP-BHI> vfy bhi
M Verify
IP-BHI Operation  --> Simplex.
      Instance#  --> 20.
      IP Address --> 135.17.59.163
Console Label     --> None Defined.
Comments:
      1 --> "This is an example"
      2 --> ""
      3 --> ""
BiSync Status:
    Connected to 135.17.59.253 Port 50009
    Code Set --> EBCDIC.
    EIA Status --> De-Asserted.
    Host Status --> Inactive.
```

In the *BiSync Status* section in the example above, it shows that this instance is connected to the DT-4180 at IP address 135.17.59.253 at port 9 (50009 - 50000 where 50000 is the base for incoming calls on a DT-4000 or DT-4180. The value of 50009 is automatically generated by the IP-BHI application.)

In the IP-BHI application, for each instance, logical cluster units and logical terminals must be defined that correspond to the actual physical host's definition for a BiSync line. The **group** (**grp**) command is used to define them. One instance of the IP-BHI application handles only one BiSync line. For more detail, refer to the document *DT-6XXX IP-BHI BiSync Host Interface Application User's Manual* which is available for download from the Datatek web site.

```
< IP-BHI> vfy grp 1
M Verify Group 1
    Terminal Type: Basic.
    Screen Size: (M2 - 24 x 80 ) 1920 Characters.
    Rx Only Attribute: No.
    Logoff Sequence: None.
    Host Unavailable Sequence: Connections are prevented.
    Host becomes available sequence: Connections are allowed.
    Comment:""
    UNITs Assigned: 0.0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7
                    0.8, 0.9, 0.10, 0.11, 0.12, 1.0, 1.1, 1.2
```

The example above shows 2 cluster units, one with 13 terminals, and the other with 3, all of which share the same attributes. Additional groups can be defined for this instance defining other clusters and terminals connected to this same BiSync line but with different attributes. There is a maximum of 8 groups and an aggregate total of 64 logical terminals per instance.

2.4.2.3 TN-3270 SERVER APPLICATION CONFIGURATION

The following reflects the output of the TN-3270 **vfy** command based on the configuration input by the **bsc** command. This output reflects the commands necessary to configure the TN-3270 Server Application so that it is consistent with the configuration needs of the network diagram in Figure 4

```
<TN3270> bsc dest=135.17.59.163 dport=33801
Where
      dest=IP address of the DT-6XXX
dport=TCP port number (This is the same port number as specified on a DT-
      4000, DT-4180, or DT-4280 for the host line plus the client group
      number described above.)


<TN3270> vfy


M Verify TN3270 Instance Configuration

    Local IP Address: 135.17.59.163, Instance Number: 21
    BiSync Host Interface: 135.17.59.163 Port 33801
    Number of Sessions: 16
```

```
Number of Available Sessions: 0
Session Alarm Threshold: none
Terminal Type: IBM-3278-2
Delay after Host connect: 5
Server TCP Port: 34000
Console Inactivity Timeout DISABLED
Session Inactivity Timeout DISABLED
```

The *server TCP port* number (34000 in the above example) is computed using the instance number of the TN-3270 Server Application in the equation below in the next section. This value can be overridden by the **server** command.

One instance of the TN-3270 Server application can support up to 20 host lines. Each host line is configured by specifying corresponding **dest** and **dport** parameters.

2.4.3   PC TN-3270 CLIENT

For whatever TN-3270 client is being used, certain configuration parameters must be administered on the client to insure connectivity to the BiSync Host. These parameters are:

1. DT-6XXX IP Address
2. TCP Port Number of the application instance being called

Based on the previous network diagram in Figure 4.

The DT-6061 IP Address is *135.17.59.163.*
The TCP Port number at the Server is *34000*.

The default TCP port number for an instance is a function of the instance in which the application is installed on the DT-6XXX. It is calculated using the following equation:

TCP Port Number = 30000 + ((instance # - 1) X 200)

The **server** command can be used to change the default TCP port number. That, in turn, will allow multiple instances to share a common TCP port number. A commonly used, shared TCP port value is 23, which is the standard telnet port value.

3 APPLICATION COMMANDS

3.1 INPUT CONVENTIONS

All parameters must be given on the command line. Parameters of the form **name=<value>** may be given in any order. Only the **login** command might generate a prompt if the **passwd=<value>**

❑ Commands may be entered in upper or lower case.

❑ Parameters of the form **name=value** may use upper or lower case for **name**.

Default values, if any, are shown in parenthesis as part of the prompt.

❑ Case is preserved for values.

❑ When a password is being requested by a prompt, input is not echoed.

❑ Backspace erases one character and **ctrl-U** or **del** (the delete key) deletes the current line of input.

3.2 LOGIN

Syntax: login PASSWD=<password> *(The default password is "initial")*

The **login** command is used to allow access to the other configuration commands.

The **PASSWD** parameter is not echo suppressed. However, if the **PASSWD** parameter is not provided, the console prompts for a password; the response *is* echo-suppressed in this case. Passwords are case sensitive. Upper and lower case letters may be intermixed with digits and other characters.

If the password is valid, the user is placed in the *logged in* mode. Once the console user is logged *in*, the rest of the commands are accessible.

Note: Every application instance might be assigned a different password.

3.3 LOGOUT

Syntax: logout

The **logout** command is only allowed if the console user is logged *in*. It uses no arguments. It will set the console to the logged *out* mode.

3.4 CHANGE PASSWORD - CHGPASS

Syntax: chgpass OLD=<old passwd> NEW=<new> CONFIRM=<new>

The **chgpass** command is used to change a user password on a particular application type. The command is only allowed if the user is logged *in*.

All three parameters must be given on the same line as the command. None of those entries are echo-suppressed. Passwords are case sensitive. Upper and lower case letters must be intermixed.

If the current password is valid, and the two entries for the new password match, the password is changed to the new value.

3.5 APPLICATION CONSOLE USER HELP

Syntax: help | ? [command]

The **help** command is always visible. The **help** command displays the currently allowed commands for the mode that the unit is currently entered.

3.6   LABEL

The **label** command is only allowed when the unit is logged in.

Syntax: label [<word> *(no spaces)* **| none | "<string – spaces allowed"]**

This command enters a *label* that subsequently appears as part of the system console prompt. Labels can be up to 31 characters long. The label can have embedded blanks if enclosed in double quotes. Labels are case sensitive. The word "**none**" deletes the label.

3.7   VERSION - VER

Syntax: ver

The **version** command is only visible when the application is *logged in*. The command has no arguments. It displays the current software and database revisions of the application.

3.8   CONFIGURING BISYNC HOST INTERFACE PARAMETERS - BSC

Syntax: BSC [dest<n>=<DT-6XXX address of IP-BHI application or UMI IP
         Address>] [dport<n>=<Computed IP-BHI Application Port number or
         UMI TCP Hunt Group Port number>] [numsess<n>=<#Sessions>]
         [ttype=<TERM ID>] [ttype2=<TERM ID>| none] [delay=<seconds>]
         [almthresh=<% for alarm threshold> | off]

The **BSC** command is only visible when the application is logged in. The command is used to configure the parameters needed for connections to a *BiSync Host Interface Application*. There is one such connection for each active client.

The value of **<n>** in the **dest**, **dport**, and **numsess** parameters may be **1** to **20**. Up to 20 different host links, on the same or different hosts, can be configured for an instance. At least one needs to be configured.

 If **<n>** is omitted, **1** is the default; i.e. **dest=** is the same as **dest1=**.

The **dest<n>** parameter specifies the IP address of the DT-6XXX containing the IP-BHI application or the IP address of the UMI module.

When the **dest<n>** IP address is the IP-BHI application, the **dport<n>** parameter value is determined using the equation **30000 + ((instance # - 1) X 200) + the client group number.** For further explanation of the client group number, see the *DT-6XXX IP-BHI BiSync Host Interface Application User's Manual.*

When the **dest<n>** IP address is the UMI module IP address, the **dport<n>** parameter is the TCP port of the hunt group for the **<n>**'th BHI, i.e. UMI module hunt group port, to which the TN-3270 Server makes connections on behalf of its clients.

The **numsess<n>** parameter declares the maximum number of sessions supported by the **<n>**'th group. The default is sixteen (16). The number of client sessions should match the number of available terminal slots on the BHI. The total of all the configured **numsess<n>** values is the maximum number of client sessions that will be handled by this **instance**, and may not exceed 100.

To remove a host from the list, execute the following:

          bsc dest<n>=0.0.0.0

          bsc numsess<n>=0

The **ttype** parameter specifies the terminal type as specified by the host line and the BHI configuration. The TN-3270 server will cycle the client to set this value via the RFC 884 Telnet option sequence. The default value is "IBM-3278-2" which is a 24x80 terminal. Other allowed values are: "IBM-3275-2", "IBM-3276-2", "IBM-3276-3", IBM-3276-4", "IBM-3277-2", "IBM-3278-2", "IBM-3278-3", "IBM-3278-4", "IBM-3278-5", "IBM-3279-2", and "IBM-3279-3".

For clients that do not cycle properly, the **ttype2** parameter may be used to declare an alternate terminal type that the TN-3270 Server Application will accept. The secondary type is accepted after the primary type has been rejected 4 times. This technique may be used **IF** the client and the BiSync host use a mutual subset of the capabilities of the secondary terminal type. To delete a secondary type, enter **ttype2=none**.

The **almthresh** parameter declares an alarm threshold, expressed as a percentage of the total available sessions. When the number of active sessions exceeds this percentage, an alarm is reported on the console of the TN-3270 Server Application, if active, or on the DT-6XXX system console. When the number of sessions subsequently drops below 85% of the configured threshold, the alarm is cleared, with a similar console report indicating the condition has cleared. The alarm is disabled by **almthresh=off.**

The **delay** parameter specifies a number of seconds (from **0** to **10**) following the client's initial connection during which messages from the BHI side are dropped instead of being forwarded to the client. After the delay, the "Connected" message is sent. The only purpose for setting a non-zero delay is to configure the TN-3270 Server Application for use with a programmed client and a legacy network in which non-TN3270 messages may originate from the network during call setup. Program-based clients have notorious problems with these non-standard messages. With a delay of **0**, the TN-3270 Server Application suppresses host messages until the client sends its first message (i.e. the user hits **enter**). The **dc** command shows a connection pending delay as "Allocated" instead of "Connected".

3.9 SERVER

Syntax: server [default|<server port number>]

The **server** command is only visible when the application is logged in. The command is used to configure the TCP port number used to accept TN-3270 calls. The default setting will return the TN-3270 instance to the default TCP port number associated with that instance based on the formula: *30000 + ((instance # - 1) X 200).*

3.10 TIMEOUT

Syntax: timeout [console=<seconds> | off] [session=<seconds> | off]

The **timeout** command is only visible when the application is logged in. The command is used to monitor application console inactivity and tn3270 session inactivity. Inactivity is defined as the complete absence of data over the specified period of time. The **console** parameter sets the inactivity timeout value for the application console. The **range of values is 15-254 seconds**. The **session** parameter sets the inactivity timeout value for user sessions. The **range of values is 5-3600 seconds.**

3.11 VERIFY CONFIGURATION – VFY | VFYCFG

Syntax: vfy

The **vfy** command is only visible when the application is logged in. The command is used to display the configured options on the TN-3270 Server application.

3.12 DISPLAY CURRENT CONNECTIONS – DC | DCONN

Syntax: dconn

The **dconn or dc** command is used to display all of the current client connections into the TN-3270 Server application. The command will issue a report that shows the connection peer for each active connection.

3.13 DISPLAY LOG - DLOG

Syntax: dlog

The **dlog** command is only visible when the application is logged in. This command is used to display the entries in the error log.

An exclamation point (!) that precedes a log entry denotes new entries. A double asterisk (**) that precedes a log entry denotes folding of multiple similar entries into a single line.

The log file can be cleared with the command: **dlog clr**

3.14 DISPLAY MEASUREMENTS – DMEAS | DM

Syntax: dmeas [SESS <Session #>]

The **dmeas** command is only visible when the application is logged in. The command is used to display currently available measurements on sessions between clients and the host.

The **SESS < Session #>** parameter will limit the display to a particular session number. Session numbers are in the range of one through the maximum allowed per the configuration. The **SESS < Session #>** parameter is not required to display all sessions with non-zero data.

Measurements are only displayed if they are nonzero.

The per session measurements available are as follows:

Measurement Description
Number of Messages from the Client to the Host.
Number of Bytes from the Client to the Host.
Number of Messages from the Host to the Client.
Number of Bytes from the Host to the Client.
Number of Empty Messages from the Host to the Client (dropped)[4]
Peak Number of Sessions

Table 1: Dmeas Measurement Categories

3.15 CLEAR - CLR

Syntax: clr

The **clr** command is only visible when the application is logged in. The command is used to clear all measurement tables on sessions between clients and the host.

---

[4] This measurement is suppressed if zero, even when the other measurements are nonzero.

4 APPLICATION SOFTWARE INSTALLATION & UPGRADE

An application may be initially installed, or upgraded, using the **install** and **regapp** commands on the DT-6XXX console. Release 13.0 and higher must be installed on a DT-6061 running platform software build 16 and higher or on a DT-6160 or DT-6260 with any platform software build.

In the *DT-6XXX Platform User's Manual,* refer to the section titled: *"Application Software Installation & Upgrade"*

5 HARDWARE WARRANTY

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